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# Interpreting Streamflow Forecasts

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## Introduction

Each month, five forecasts are issued for each forecast point and each forecast period. Unless otherwise specified, all streamflow forecasts are for streamflow volumes that would occur naturally without any upstream influences. Water users need to know what the different forecasts represent if they are to use the information correctly when making operational decisions. The following is an explanation of each of the forecasts.

***Most Probable (50 Percent Chance of Exceeding) Forecast.*** This forecast is the best estimate of streamflow volume that can be produced given current conditions and based on the outcome of similar past situations. There is a 50 percent chance that the streamflow volume will exceed this forecast value. There is a 50 percent chance that the streamflow volume will be less than this forecast value.

The most probable forecast will rarely be exactly right, due to errors resulting from future weather conditions and the forecast equation itself. This does not mean that users should not use the most probable forecast; it means that they need to evaluate existing circumstances and determine the amount of risk they are willing to take by accepting this forecast value.

## To Decrease the Chance of Having Too Little Water

If users want to make sure there is enough water available for their operations, they might determine that a 50 percent chance of the streamflow volume being lower than the most probable forecast is too much risk to take. To reduce the risk of not having enough water available during the forecast period, users can base their operational decisions on one of the forecasts with a greater chance of being exceeded (or possibly some point in-between). These include:

***70 Percent Chance of Exceeding Forecast.*** There is a 70 percent chance that the streamflow volume will exceed this forecast value. There is a 30 percent chance the streamflow volume will be less than this forecast value.

***90 Percent Chance of Exceeding Forecast.*** There is a 90 percent chance that the streamflow volume will exceed this forecast value. There is a 10 percent chance the streamflow volume will be less than this forecast value.

## To Decrease the Chance of Having Too Much Water

If users want to make sure they don't have too much water, they might determine that a 50 percent chance of the streamflow being higher than the most probable forecast is too much of a risk to take. To reduce the risk of having too much water available during the forecast period, users can base their operational decisions on one of the forecasts with a smaller chance of being exceeded. These include:

***30 Percent Chance of Exceeding Forecast.*** There is a 30 percent chance that the streamflow volume will exceed this forecast value. There is a 70 percent chance the streamflow volume will be less than this forecast value.

***10 Percent Chance of Exceeding Forecast.*** There is a 10 percent chance that the streamflow volume will exceed this forecast value. There is a 90 percent chance the streamflow volume will be less than this forecast value.

## Using the forecasts—an example

**Using the Most Probable Forecast.** Using the example forecasts shown below, users can reasonably expect 36,000 acre-feet to flow past the gaging station on the Mary's River near Deeth between March 1 and July 31.

**Using the Higher Exceedance Forecasts.** If users anticipate a somewhat drier trend in the future (monthly and seasonal weather outlooks are available from the National Weather Service every two weeks), or if they are operating at a level where an unexpected shortage of water could cause problems, they might want to plan on receiving only 20,000 acre-feet (from the 70 percent chance of exceeding forecast). In seven out of ten years with similar conditions, streamflow volumes will exceed the 20,000 acre-foot forecast.

If users anticipate extremely dry conditions for the remainder of the season, or if they determine the risk of using the 70 percent chance of exceeding forecast is too great, then they might plan on receiving only 5000 acre-feet (from the 90 percent chance of exceeding forecast). Nine out of ten years with similar conditions, streamflow volumes will exceed the 5000 acre-foot forecast.

**Using the Lower Exceedance Forecasts.** If users expect wetter future conditions, or if the chance that five out of every ten years with similar conditions would produce streamflow volumes greater than 36,000 acre-feet was more than they would like to risk, they might plan on receiving 52,000 acre-feet (from the 30 percent chance of exceeding forecast) to minimize potential flooding problems. Three out of ten years with similar conditions, streamflows will exceed the 52,000 acre-foot forecast.

In years when users expect extremely wet conditions for the remainder of the season and the threat of severe flooding and downstream damage exists, they might choose to use the 76,000 acre-foot (10 percent chance of exceeding) forecast for their water management operations. Streamflow volumes will exceed this level only one year out of ten.

UPPER HUMBOLDT RIVER BASIN									
STREAMFLOW FORECASTS									
FORECAST POINT	FORECAST PERIOD	<-----DRIER----- FUTURE CONDITIONS -----WETTER----->							
		----- Chance of Exceeding -----							
		90%	70%	50% (Most Probable)	30%	10%	25 YR.		
		(1000AF)	(1000AF)	(1000AF) (% AVG.)	(1000AF)	(1000AF)	(1000AF)	(1000AF)	(1000AF)
MARY'S RIVER nr Deeth	MAR-JUL	5.0	20.0	36	77	52	76	47	
	APR-JUL	8.0	17.0	31	74	45	67	42	
LAMOILLE CREEK nr Lamoille	MAR-JUL	6.0	16.0	24	79	32	43	31	
	APR-JUL	4.0	15.0	22	75	30	41	30	
NF HUMBOLDT RIVER at Devils Gate	MAR-JUL	6.0	12.0	43	73	74	121	59	

For more information concerning streamflow forecasting ask your local SCS field office for a copy of "A Field Office Guide for Interpreting Steamflow Forecasts".



## GENERAL OUTLOOK

### - IDAHO -

#### SUMMARY

FEBRUARY 1, 1991

JANUARY WAS ANOTHER DISAPPOINTING MONTH ACROSS THE ENTIRE STATE, WITH MOST MOUNTAIN SNOTEL STATIONS RECEIVING ONLY ABOUT HALF OF THE NORMAL SNOWFALL FOR THE MONTH. WITH OVER HALF OF THE WINTER ACCUMULATION SEASON BEHIND US, IT IS HIGHLY UNLIKELY THAT THE SNOWPACK DEFICIT IN CENTRAL AND SOUTHERN IDAHO CAN BE OVERCOME BEFORE SPRING RUNOFF BEGINS. WATER USERS IN THESE AREAS SHOULD BE PREPARED FOR POTENTIALLY CRITICAL WATER SHORTAGES, AND SHOULD KEEP IN TOUCH WITH THEIR LOCAL IRRIGATION DISTRICTS FOR MORE SPECIFIC INFORMATION. WATER SUPPLIES SHOULD BE ADEQUATE IN NORTHERN IDAHO.

#### SNOWPACK

Snowfall was sparse across the entire state during January, with northern Idaho receiving a little more than half of normal precipitation, and southern Idaho receiving a little less than half. Consequently, snowpacks in the north have declined from last month, in terms of percent of normal, while the central and southern mountains report snowpacks similar to those last month. Conditions are now near average in the Idaho panhandle and Clearwater River basin but drop to only about half of normal or less in the central part of the state. Eastern Idaho shows a slight decrease from last month, where the upper Snake basin now reports 70% of average snowpack. Conditions along the southern edge of the state range from 66 to 80% of normal. With only a couple of months remaining in the winter accumulation season, it is highly unlikely that the snowpack deficit in central and southern Idaho can be overcome before the spring runoff season begins.

#### PRECIPITATION

January was yet another disappointing month for precipitation across the entire state. Mountain SNOTEL stations reported 60-80% of normal precipitation in the northern part of the state, with values less than 10% of average being reported at individual stations in the Wood and Lost River basins of central Idaho. Boise received less than an inch of precipitation for January, bringing the water year total to 56% of average. Temperatures for January were below normal throughout the state, with the first and last weeks of the month exhibiting well below normal temperatures. The National Weather Service's 30 day outlook for February calls for near normal precipitation in northern and southwestern Idaho, below normal in southeastern Idaho, with slightly above normal temperatures for the entire state.

## RESERVOIRS

Reservoir operations in Idaho reflect the regional differences in snowpack: northern Idaho reservoirs are preserving flood control space while reservoirs in the drier central and southern parts of the state are in conservation operations. Reservoir storage in northern Idaho is near average, but conditions drop to below average in the central and southern part of the state. The three reservoirs on the Boise system report 70% of normal storage (42% of capacity) for February 1. Nine reservoirs on the Snake system report 79% of normal storage (55% of capacity). Areas of major concern continue to be Magic Reservoir (21% of average, 10% of capacity), Oakley Reservoir (31% of average, 10% of capacity), Blackfoot Reservoir (37% of average, 25% of capacity), and Salmon Falls Reservoir (29% of average, 8% of capacity). Irrigators in these basins should keep in touch with their local irrigation districts for more specific information.

## STREAMFLOW

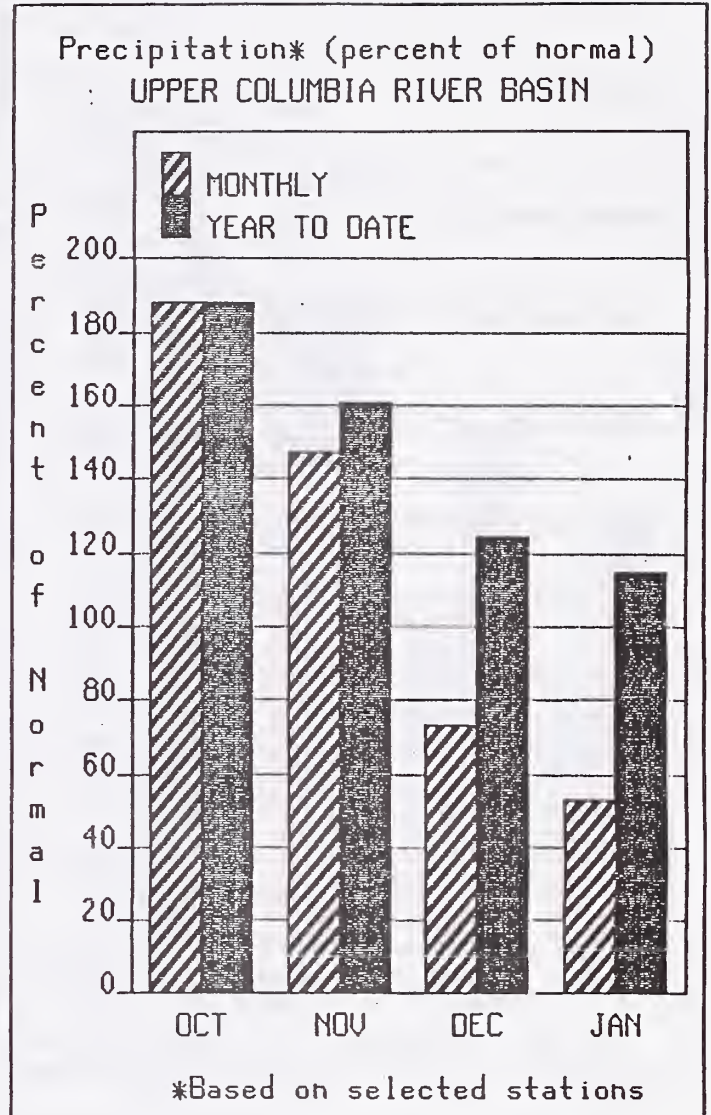
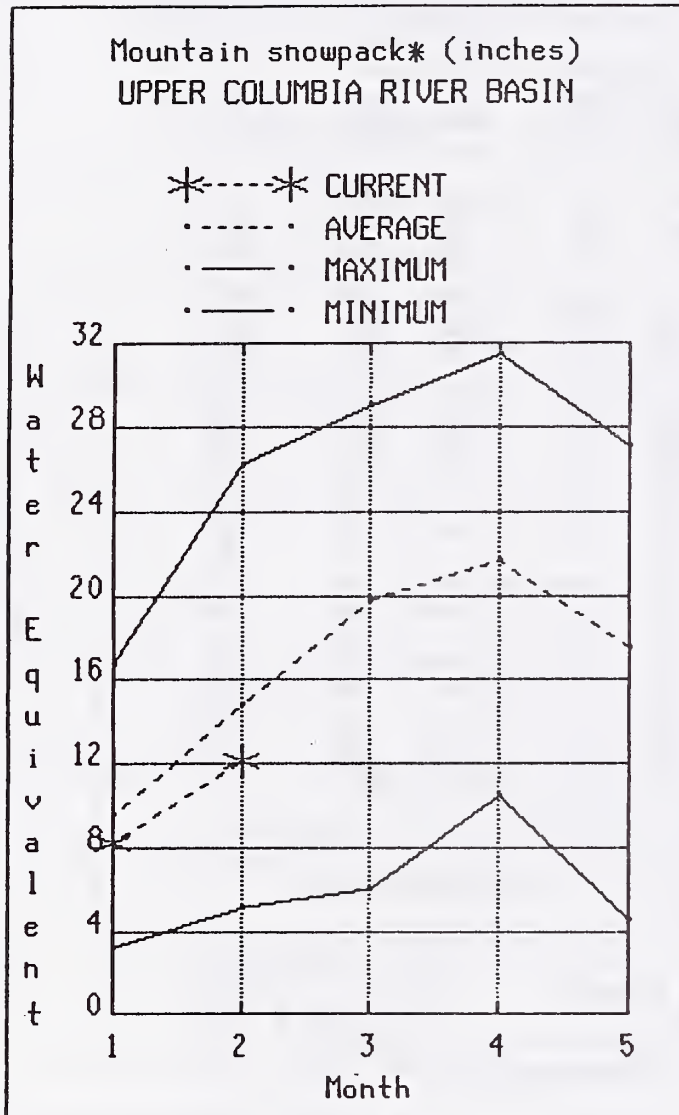
January streamflow was near normal in northern Idaho, below normal in the upper Snake and Henrys Fork, and well below normal throughout central and southern Idaho. The low base flow conditions are the result of four successive drier than average years. Forecasts for the coming runoff season vary widely around the state, reflecting the diverse snowpack situation. Below normal snow accumulation in January, however, has resulted in all runoff projections decreasing from those reported last month. Central Idaho watersheds are in the well below normal category and range from 26% of average on the Big Wood River to 63% for the Salmon River. The upper Snake and southside Snake basins are forecast below average, ranging from 44% of normal for the Owyhee River to 82% for the Teton and Snake Rivers. Northern Idaho streams are forecast to produce near normal seasonal volumes this year, ranging from 95% of average for the Clearwater River to 127% for the Kootenai.

## RECREATIONAL OUTLOOK

February 1 snowpack levels indicate that an earlier than normal runoff season with lower peak flows is to be expected this spring in central, southern, and eastern Idaho. Near average snowpacks in northern Idaho promise excellent whitewater boating on the Lochsa, Selway, Moyie, and St. Joe rivers. Boaters should plan for an early season on Idaho's southwest desert rivers. Additional snow accumulation during the remainder of the winter and the timing of the spring runoff will determine actual flow conditions on Idaho's rivers.

# Upper Columbia River Basin

## FEBRUARY 1, 1991



## WATER SUPPLY OUTLOOK

Mountain snowfall was below average in the Idaho Panhandle during January. As a result, snowpacks have decreased from last month in terms of percent of normal, and now range from 90% of average in the Priest River basin to 136% in the Moyie River basin. Rathdrum Creek reports 64% of normal snowpack. In spite of the below average precipitation in January, Panhandle snowpacks are still the best in the state. As a result, expected streamflows look promising: forecasts for the April-July period range from 100% of normal for the Spokane River to 127% for the Kootenai. Current conditions indicate an adequate water supply should be available this spring and summer in the Idaho panhandle.



# UPPER COLUMBIA RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		DRIER		CHANCE OF EXCEEDING *		WETTER		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
KOOTENAI at Laonia (1,2)	APR-SEP	8780	10000	10700	127	11200	12600	8441
	APR-JUL	7630	8730	9300	127	9760	10900	7340
	APR-JUN	6130	7020	7490	127	7850	8790	5899
CLARK FK at Whitahorsa Rpda (1,2)	APR-SEP	11000	13400	14700	110	15900	18500	13370
	APR-JUL	9960	12200	13400	110	14500	16800	12150
	APR-JUN	8500	10400	11400	110	12300	14300	10360
PEND OREILLE LAKE inflow (1,2)	APR-SEP	12400	15100	16600	111	17900	20800	14930
	APR-JUL	11300	13800	15200	111	16400	19000	13650
	APR-JUN	9780	11900	13100	111	14100	16400	11780
PRIEST nr Priest River (1,2)	APR-SEP	705	885	995	111	1090	1290	893
	APR-JUL	660	830	935	112	1020	1210	838
COEUR D'ALENE at Enavilla (1)	APR-SEP	440	715	835	101	945	1230	830
	APR-JUL	420	680	795	101	900	1170	789
ST. JOE at Calder	APR-SEP	950	1160	1310	102	1460	1680	1281
	APR-JUL	880	1090	1230	102	1370	1580	1211
SPOKANE nr Post Falls (1,2)	APR-SEP	1660	2450	2820	100	3160	3980	2820
	APR-JUL	1610	2370	2720	100	3050	3840	2723

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
HUNGRY HORSE	3451.0	2406.0	2590.0	2406.0	Kootenai ab Bonners Ferry	35	123	124
FLATHEAD LAKE	1791.0	1128.0	924.3	1133.0	Moyie River	3	167	136
PEND OREILLE	1561.2	597.1	614.5	823.1	Pend Oreille River	82	116	110
NOXON RAPIDS	335.0	308.4	317.0	314.2	Clark Fork River	60	108	92
COEUR D'ALENE	291.2	162.2	182.2	205.4	Priest River	5	96	90
PRIEST LAKE	97.7	21.0	26.0	32.9	Rathdrum Creek	1	68	73
					Hayden Lake	0	0	0
					Coeur d'Alene River	9	99	91
					St. Joe River	5	104	94
					Spokane River	14	101	93
					Paleusa River	0	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volume in the table.

The average is computed for the 1961-1985 base period.

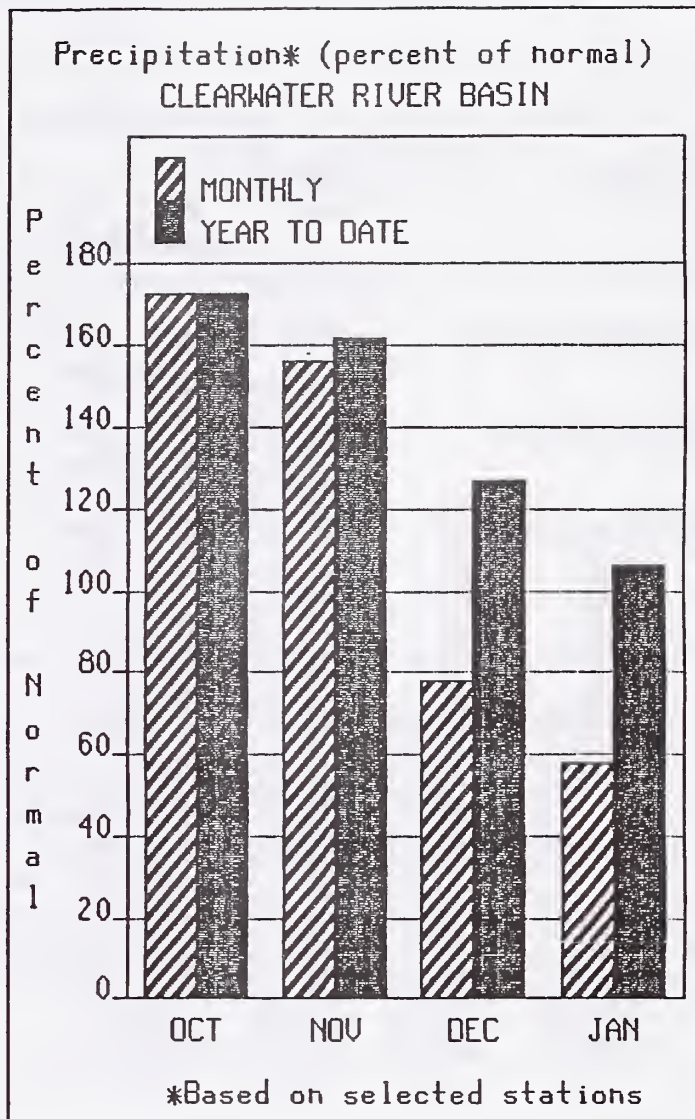
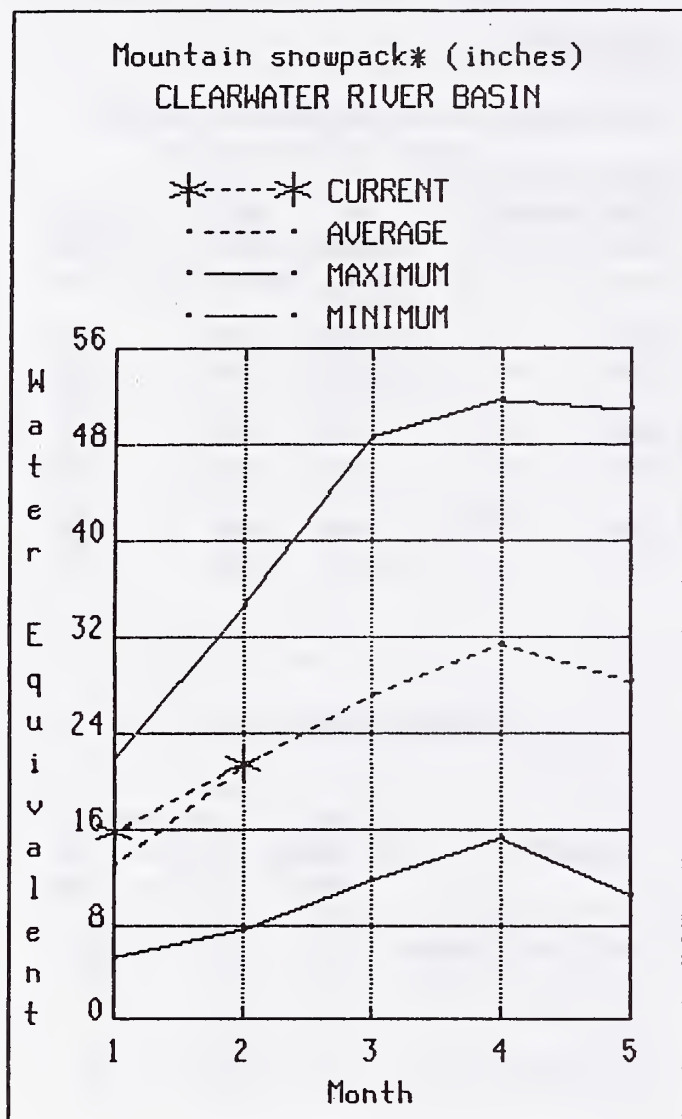
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.



# Clearwater River Basin

FEBRUARY 1, 1991



## WATER SUPPLY OUTLOOK

Below normal snowfall during January caused snowpack levels to decline somewhat from the conditions reported last month. Snowpacks are still near average, however, and range from 101% of normal in the Lochsa and Selway River basins to 103% in the North Fork Clearwater basin. Reservoir storage in Dworshak reservoir is 96% of average (61% of capacity). Streamflow forecasts have dropped somewhat from the figures reported last month, and currently range from 95% of normal for the Clearwater at Orofino to 98% for the inflow to Dworshak Reservoir. Current conditions indicate an adequate water supply should be available this spring and summer in the Clearwater River basin.

# CLEARWATER RIVER BASIN

## STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->							25 YR. (1000AF)
		CHANCE OF EXCEEDING *							
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
DWORSHAK RESERVOIR inflow (1)	APR-SEP	1720	2560	2950	98	3310	4150	3010	
	APR-JUL	1610	2400	2760	98	3100	3890	2822	
CLEARWATER at Orofino (1)	APR-SEP	3050	4340	4910	95	5470	6760	5163	
	APR-JUL	2880	4110	4650	95	5180	6400	4889	
CLEARWATER at Spalding (1,2)	APR-SEP	4940	7120	8110	97	9130	11200	8378	
	APR-JUL	4670	6730	7670	97	8630	10600	7916	

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
DWORSHAK	3467.8	2119.5	2592.3	2198.2	North Fork Clearwater	10	120	100
					Lochsa River	5	116	101
					Selway River	2	123	96
					Clearwater River	14	119	99

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

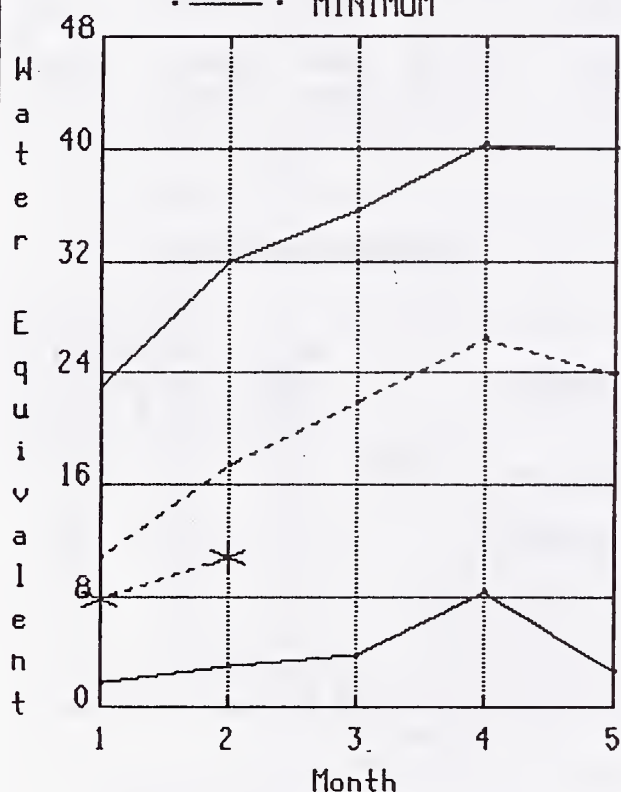
(2) - The value is natural flow - actual flow may be affected by upstream water management.

# Salmon River Basin

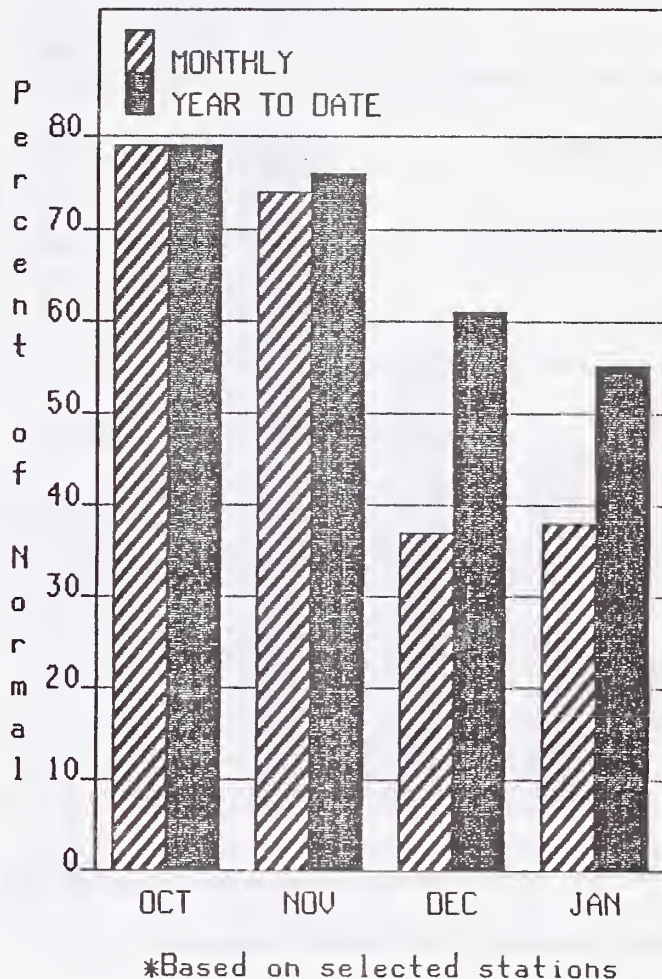
FEBRUARY 1, 1991

Mountain snowpack\* (inches)  
SALMON RIVER BASIN

\*---\* CURRENT  
- - - - AVERAGE  
- - - - MAXIMUM  
- - - - MINIMUM



Precipitation\* (percent of normal)  
SALMON RIVER BASIN



## WATER SUPPLY OUTLOOK

Snowpack conditions change drastically from the Clearwater basin in the north to the Salmon River basin just to the south. Currently, snowpacks range from 55% of average for the Salmon River above Salmon to 74% in the Lemhi basin. Mountain precipitation, as reported by the SNOTEL system, was only 50% of average for the month of January. As a result, streamflow forecasts have dropped from last month's

figures and currently range from 59% of average for the Salmon at Whitebird to 63% for the Salmon at Salmon. Water users should monitor conditions closely as the season progresses. Whitewater enthusiasts should plan for slightly earlier than normal runoff, reduced peak flows, and an early recession to low flow conditions.



# SALMON RIVER BASIN

## STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<div style="display: flex; justify-content: space-between; align-items: center;"> <span>&lt;----- DRIER -----</span> <span>FUTURE CONDITIONS</span> <span>----- WETTER -----&gt;</span> </div>						
		CHANCE OF EXCEEDING *						25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SALMON at Salmon (1)	APR-SEP	235	550	675	63	810	1120	1077
	APR-JUL	200	470	580	63	690	955	919
SALMON at White Bird (1)	APR-SEP	1890	3430	4150	59	4760	6450	7007
	APR-JUL	1710	3100	3740	59	4300	5820	6322

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS		
RESERVOIR	USEABLE : CAPACITY:	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF
	: YEAR	THIS YEAR	LAST YEAR	AVG.			LAST YR. AVERAGE
					Salmon River ab Salmon	6	85 55
					Lemhi River	1	79 60
					Salmon River Total	17	92 58

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

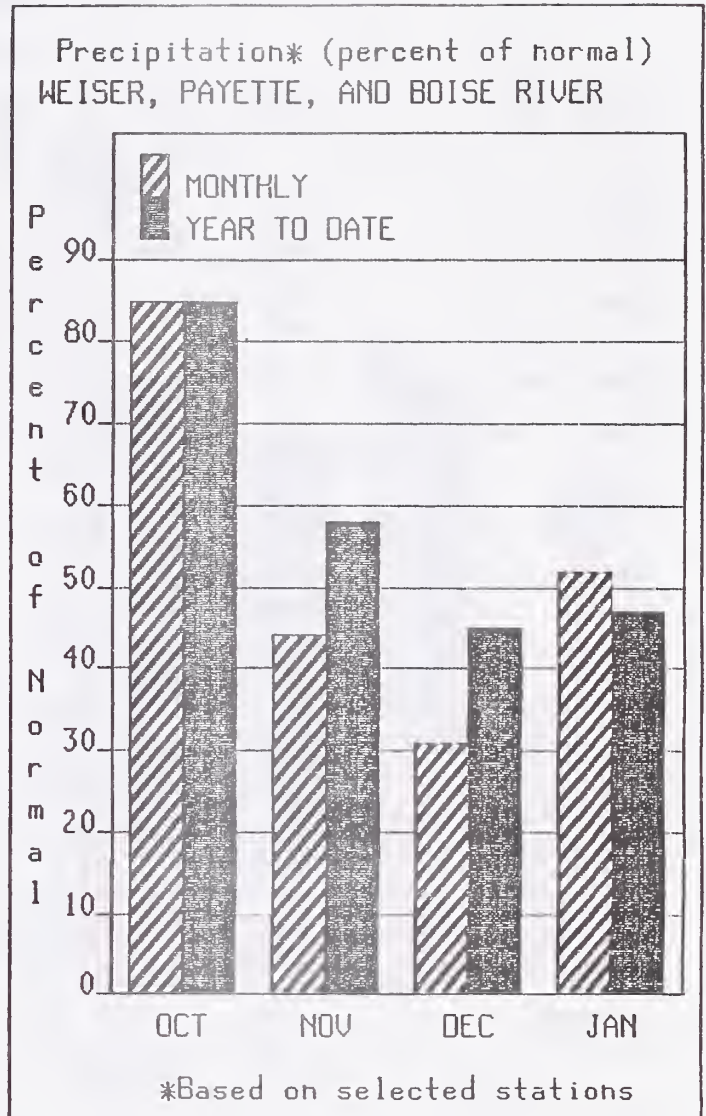
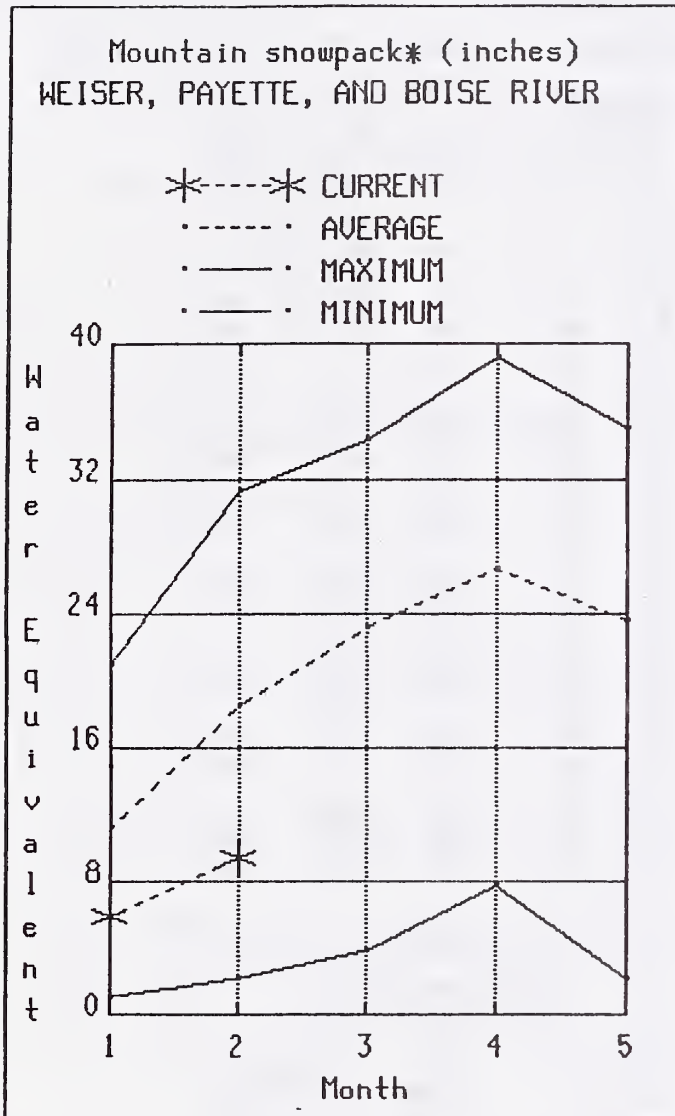
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(2) - The value is natural flow - actual flow may be affected by upstream water management.



# Weiser, Payette, and Boise River Basin

FEBRUARY 1, 1991



## WATER SUPPLY OUTLOOK

Disappointing snowfall during January has resulted in a decrease in the west central mountains' streamflow projections from last month. SNOTEL sites in the area reported only 48% of normal precipitation for January, and snowpacks now range from only 42% of normal on the Mann Creek drainage to 55% for the North Fork Payette. Correspondingly, streamflow forecasts have dropped to the 40-60% of normal range for the coming runoff season. Reservoir storage is good in the Payette basin with a combined storage of 110% of average (62% of capacity), and the system is expected to fill. In the Boise River basin, carryover storage is lower, with the three major reservoirs reporting 70% of normal storage (42% of capacity). Current projections indicate a 70% refill assuming a 15% reduction in irrigation demand through water conservation measures. Water users in the area should monitor conditions closely during the rest of the winter season and should keep in touch with their local irrigation districts for more information.

WEISER, PAYETTE, AND BOISE RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						25 YR. (1000AF)
		<----- DRIER ----->		----- WETTER ----->		CHANCE OF EXCEEDING *		
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	30% (1000AF)	10% (1000AF)	(% AVG.)	
WEISER nr Weiser (1)	APR-SEP	89	129	173	39	240	430	444
	APR-JUL	83	120	163	39	225	400	414
SF PAYETTE at Lowman	APR-SEP	184	245	285	56	325	385	512
	APR-JUL	153	210	245	54	280	335	454
DEADWOOD RESERVOIR inflow (1)	APR-JUL	47	73	86	60	97	124	143
NF PAYETTE at Cascade (1,2)	APR-SEP	170	280	330	58	380	495	568
	APR-JUL	159	265	310	58	355	460	531
NF PAYETTE nr Banks (2)	APR-SEP	245	355	430	58	505	615	737
	APR-JUL	230	330	400	58	470	570	691
PAYETTE nr Horseshoe Bend (1,2)	APR-SEP	505	875	1060	57	1250	1620	1862
	APR-JUL	465	810	980	57	1150	1490	1717
BOISE nr Twin Springs (1)	APR-SEP	230	345	395	55	445	560	722
	APR-JUL	193	310	360	54	410	520	664
SF BOISE at Anderson Rnch Dm (1,2)	APR-SEP	73	191	245	40	300	415	619
	APR-JUL	62	174	225	39	275	390	578
BOISE nr Boise (1,2)	APR-SEP	330	620	750	46	880	1170	1628
	APR-JUL	275	550	675	45	800	1070	1508
	APR-JUN	290	510	610	46	710	930	1334

RESERVOIR STORAGE					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
MANN CREEK	11.3	2.2	3.4	5.4	Mann Creek	1	100	42
CASCADE	703.2	452.5	470.3	409.4	Weiser River	4	78	44
DEADWOOD	162.0	82.6	87.2	79.5	North Fork Payette	7	100	55
ANDERSON RANCH	464.2	175.8	260.5	300.6	South Fork Payette	7	94	52
ARROWROCK	286.6	204.5	110.7	223.9	Payette River Total	14	97	53
LUCKY PEAK	307.0	66.2	101.4	117.4	Middle & North Fork Boise	7	85	52
LAKE LOWELL (DEER FLAT)	177.0	58.7	106.3	131.0	South Fork Boise River	6	82	44
					Boise River Total	14	96	52
					Canyon Creek	0	0	0

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

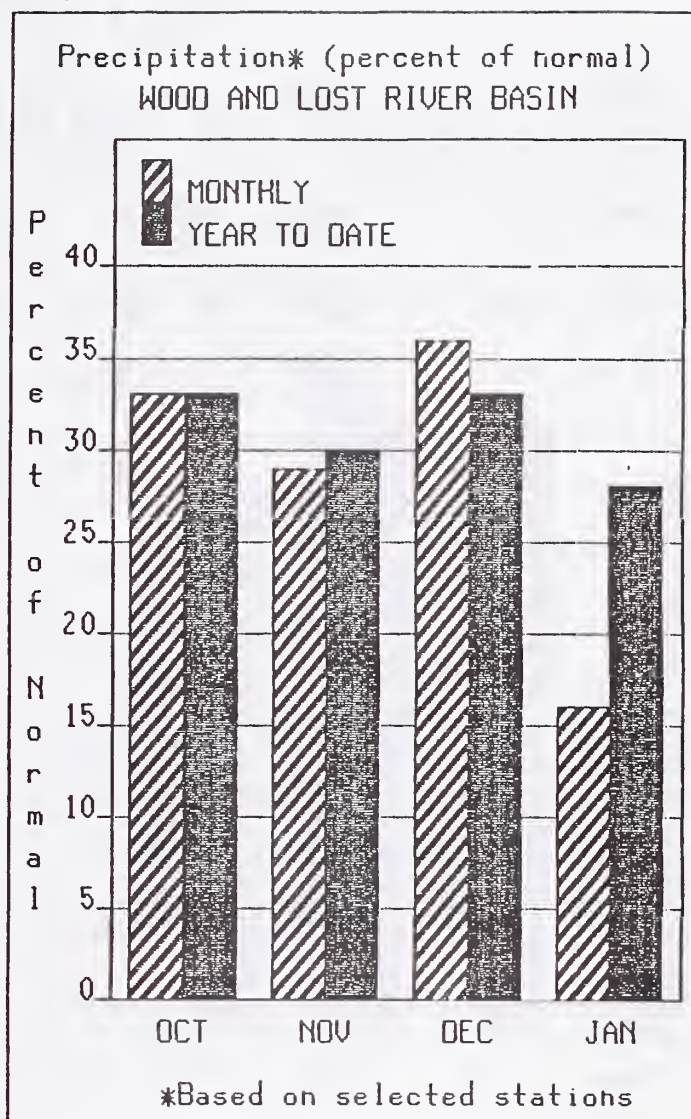
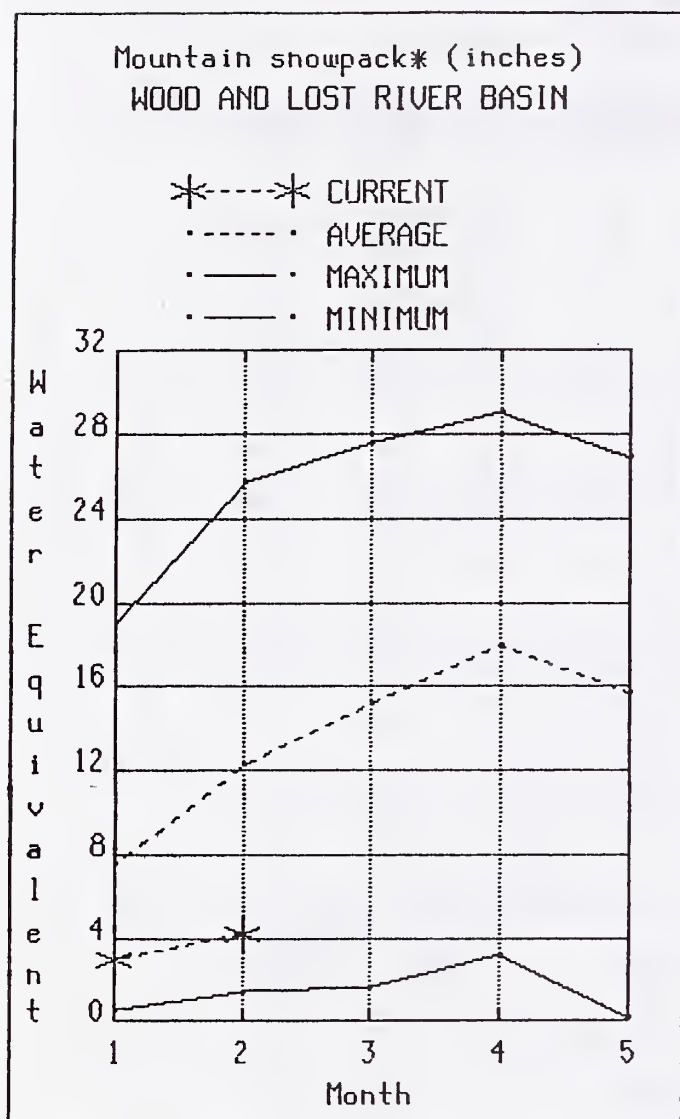
The average is computed for the 1961-1985 base period.

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(2) - The value is natural flow - actual flow may be affected by upstream water management.

# Big Wood, Little Wood, Big Lost, and Little Lost River Basin

FEBRUARY 1, 1991



## WATER SUPPLY OUTLOOK

The Wood and Lost River basins continue to be plagued with critically low snowpack levels. SNOTEL sites in the basin reported only 24% of normal precipitation for the month of January. Consequently, snowpacks have dropped to only 30-40% of average, the second lowest in the last forty years. The Little Wood and Fish Creek basins report the lowest snowpacks in the state with only 28% of average. The bleak situation is further compounded by low reservoir storage: Magic Reservoir reports only 21% of average storage (10% of capacity), Little Wood reports 56% of average (29% of capacity), and Mackay reports 63% of average (42% of capacity). Streams in the basin are expected to produce less than half of their normal runoff, with the Big Wood forecast at only 26% of average flow. Water users in the basin should be prepared for **CRITICALLY SHORT WATER SUPPLIES** this summer, and should keep in touch with their local irrigation districts for more specific information.



# BIG WOOD, LITTLE WOOD, BIG LOST, AND LITTLE LOST RIVER BASIN

## STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		DRIER		CHANCE OF EXCEEDING *		WETTER		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BIG WOOD nr Bellevue	APR-SEP	19.0	36	68	32	100	148	214
	APR-JUL	16.0	32	63	32	94	140	198
BIG WOOD bl Magic Dam (2)	APR-SEP	27	41	88	26	135	205	338
	APR-JUL	26	37	83	26	129	196	322
LITTLE WOOD nr Carey	APR-SEP	3.0	23	36	34	50	69	107
	APR-JUL	3.0	17.0	30	30	43	62	99
BIG LOST at Howell Ranch nr Chilly	APR-SEP	47	78	100	46	122	153	219
	APR-JUL	39	68	88	46	108	137	192
	APR-JUN	33	54	68	46	82	103	148
BIG LOST bl Mackay Reservoir (2)	APR-SEP	35	64	84	43	104	133	195
	APR-JUL	24	52	70	43	88	116	162
LITTLE LOST bl Wet Ck	APR-SEP	8.0	14.7	19.2	48	24	30	40
	APR-JUL	7.0	12.0	15.4	48	18.8	24	32
LITTLE LOST nr Howe	APR-SEP	12.0	18.0	21	48	25	30	44
	APR-JUL	9.0	12.9	15.5	47	18.1	22	33

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
MAGIC	191.5	19.3	21.5	92.8	Big Wood ab Magic	10	72	41
LITTLE WOOD	30.0	8.7	13.4	15.5	Camas Creek	2	90	29
CAREY VALLEY	NO REPORT				Big Wood Total	12	73	39
MACKAY	44.5	18.9	20.7	30.0	Little Wood River	3	63	28
					Fish Creek	2	71	28
					Big Lost River	4	67	36
					Little Lost River	3	70	37

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

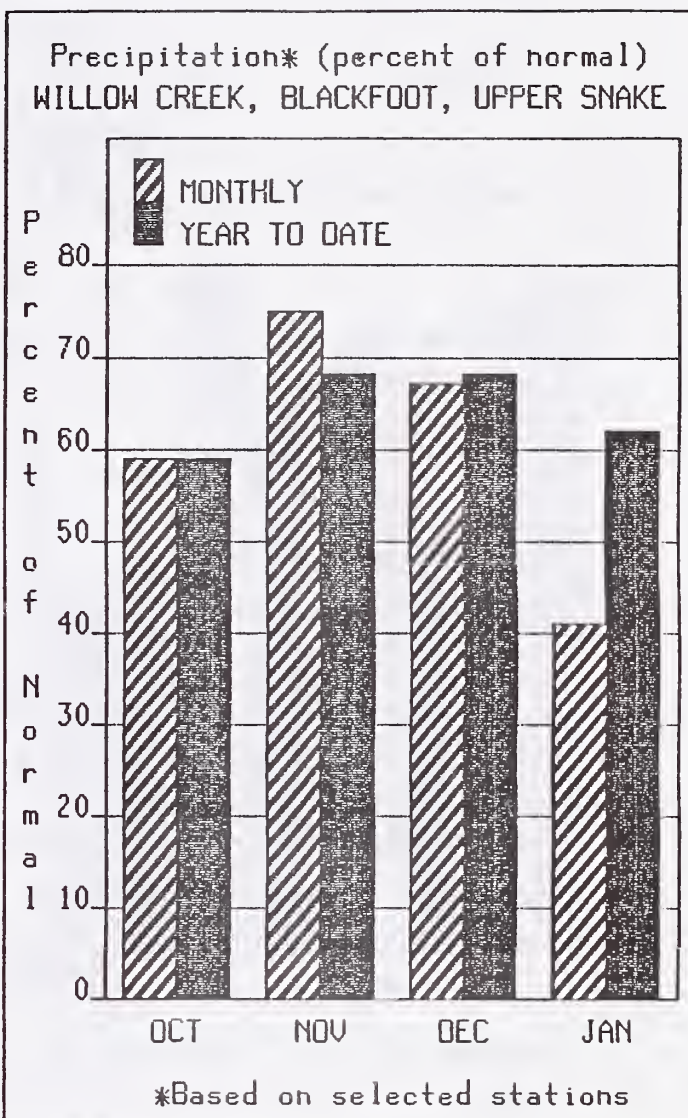
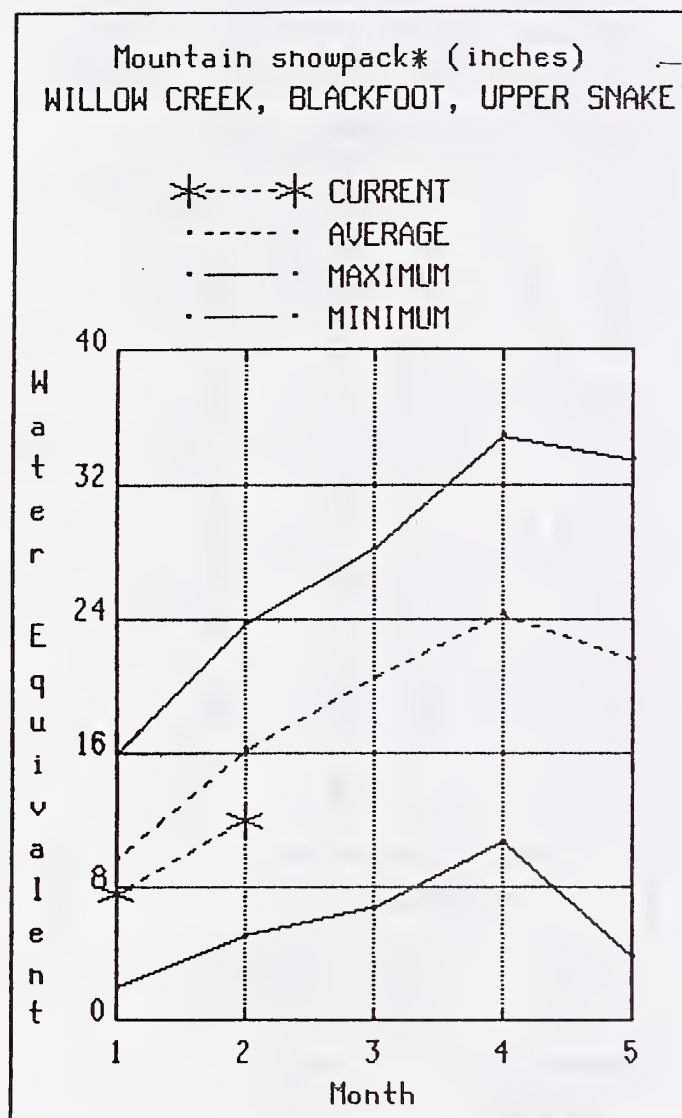
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.



# Willow Creek, Blackfoot, Upper Snake, and Portneuf River Basin

FEBRUARY 1, 1991



## WATER SUPPLY OUTLOOK

Snowpacks in eastern Idaho are considerably better than those in the central mountains to the west: conditions range from 60% of normal on the Greys River drainage to 87% on Willow Creek. One exception is the Camas-Beaver Creek area above Mud Lake where the snowpack is only 42% of average. Streamflow forecasts reflect the current snowpack conditions and range from 67% of normal for the Portneuf and Henrys Fork to 82% for the Teton and Snake Rivers. Reservoir storage in the Snake system is below average: nine key reservoirs in the basin report 79% of normal storage (55% of useable capacity). Mountain precipitation during the remaining two months of winter will be very important in determining the water supply situation in the Snake River basin. Water users should monitor the situation carefully and keep in touch with their local irrigation districts for more specific information.

WILLOW CREEK, BLACKFOOT, UPPER SNAKE, AND PORTNEUF RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	FUTURE CONDITIONS						
		DRIER		CHANCE OF EXCEEDING *		WETTER		25 YR. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
HENRYS FORK nr Ashton (2)	APR-SEP	470	520	555	74	590	645	746
	APR-JUL	345	385	410	74	435	475	557
HENRYS FORK nr Rexburg (2)	APR-SEP	750	965	1100	69	1230	1470	1595
	APR-JUL	590	745	850	67	955	1160	1260
FALLS nr Squirrel (1,2)	APR-JUL	215	265	290	78	315	370	373
TETON ab S Leigh Ck nr Driggs	APR-SEP	131	148	160	82	172	189	194
	APR-JUL	97	110	119	82	128	141	145
TETON nr St. Anthony	APR-SEP	310	355	390	81	425	470	479
	APR-JUL	250	290	315	81	340	380	387
SHAKE nr Moren (1,2)	APR-SEP	530	670	730	82	790	930	888
PALISADES RESERVOIR inflow (1,2)	APR-SEP	1990	2700	3020	78	3340	4050	3852
SHAKE nr Heise (2)	APR-SEP	2110	2760	3230	78	3700	4350	4142
	APR-JUL	1770	2350	2750	78	3150	3730	3524
SHAKE nr Blackfoot (1,2)	APR-SEP	2950	3860	4200	74	4540	5450	5680
	APR-JUL	2390	3120	3400	74	3670	4410	4589
PORTNEUF at Topex	MAR-SEP	47	62	73	67	84	99	109
	MAR-JUL	36	49	58	66	67	80	88

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
ISLAND PARK	127.6	86.0	113.7	100.7	Cameo-Beaver Creeks	6	97	42
GRASSY LAKE	15.2	13.1	12.6	10.7	Henrys Fork River	8	95	67
JACKSON LAKE	824.7	545.2	568.5	535.6	Teton River	9	100	79
PALISADES	1357.0	408.0	1012.2	1016.0	Snake above Palisades	31	89	71
AMERICAN FALLS	1700.0	964.5	1039.1	1141.5	Snake above Jackson Lake	10	92	71
BROWNLEE	975.3	788.9	784.0	665.4	Grosvonts River	3	89	85
BLACKFOOT	348.7	86.6	155.4	235.8	Hebeck River	5	91	71
HENRYS LAKE	90.4	80.4	86.4	78.7	Greys River	5	79	60
RIRIE	96.5	44.7	47.6	48.5	Salt River	6	93	75
					Willow Creek	8	120	87
					Blackfoot River	7	116	74
					Portneuf River	9	147	75
					Toponce Creek	1	141	62

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chances of Exceeding are actually 5% and 95% exceedence levels.

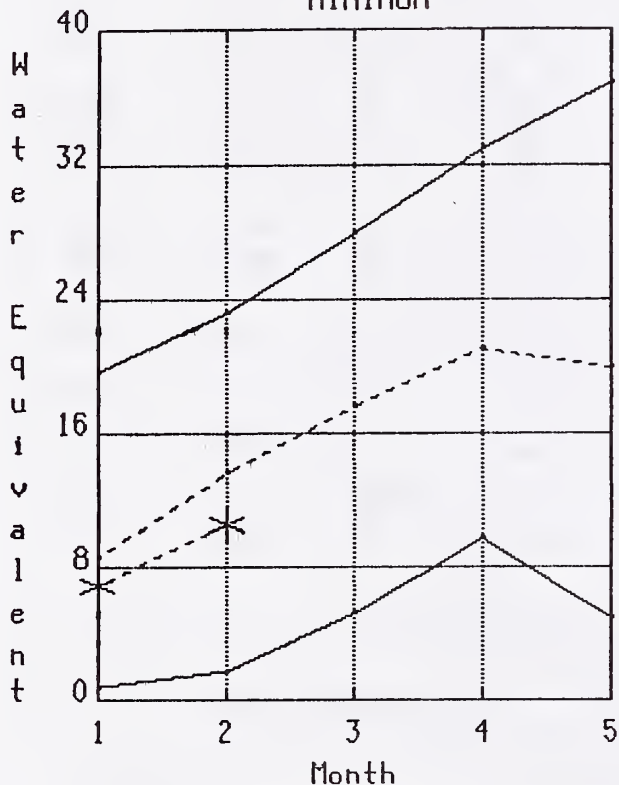
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# Southside Snake River Basin

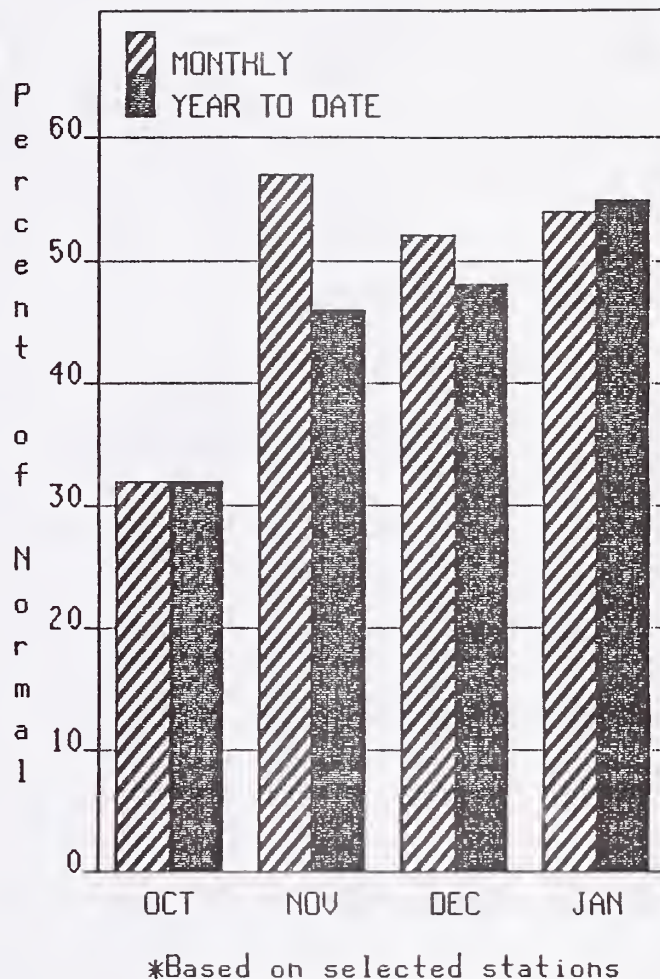
FEBRUARY 1, 1991

Mountain snowpack\* (inches)  
SOUTHSIDE SNAKE RIVER BASIN

\*---\* CURRENT  
----- AVERAGE  
- - - - - MAXIMUM  
- - - - - MINIMUM



Precipitation\* (percent of normal)  
SOUTHSIDE SNAKE RIVER BASIN



## WATER SUPPLY OUTLOOK

Snowpacks along the southern edge of the state report somewhat better conditions than Idaho's central mountains but are still below average. Snowpacks currently range from 66 to 80% of normal. Streamflow forecasts, however, show the effects of previous dry years and range from 44% of normal for the Owyhee River near Rome to 68% for Salmon Falls Creek. Reservoir storage is another gloomy component of the water supply situation: Oakley reports only 31% of average storage (10% of capacity), Salmon Falls reports 29% of average (8% of capacity), and Owyhee Reservoir reports 48% of average (31% of capacity). Water users should be prepared for yet another year of short water supplies and should keep in touch with their local irrigation districts for more specific information.



# SOUTHSIDE SNAKE RIVER BASIN

STREAMFLOW FORECASTS								
FORECAST POINT	FORECAST PERIOD	<div> <div>←----- DRIER -----</div> <div>FUTURE CONDITIONS</div> <div>----- WETTER -----→</div> </div>						
		CHANCE OF EXCEEDING *						
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	25 YR. (1000AF)
OAKLEY RESERVOIR inflow	MAR-SEP	13.0	20	25	66	30	38	38
	MAR-JUL	12.0	18.0	23	66	28	35	35
SALMON FALLS CK nr San Jacinto	MAR-SEP	28	52	69	68	86	110	102
	MAR-JUL	26	50	66	68	82	106	97
	MAR-JUN	26	48	62	68	76	98	91
BRUNEAU nr Hot Spring	MAR-SEP	55	115	155	60	196	255	260
	MAR-JUL	52	109	147	59	186	240	248
OWYHEE nr Gold Ck (2)	MAR-JUL	2.6	11.1	18.2	55	25	36	33
OWYHEE nr Owyhee (2)	APR-JUL	6.0	33	51	59	69	96	86
OWYHEE nr Rome	FEB-JUL	51	157	280	44	405	585	638
OWYHEE RESERVOIR inflow (1,2)	APR-SEP	36	69	210	46	350	540	452
	FEB-JUL	53	184	315	47	445	735	668

RESERVOIR STORAGE					WATERSHED SNOWPACK ANALYSIS		
(1000AF)							
RESERVOIR	USEABLE :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR. AVERAGE
	CAPACITY :	THIS	LAST	AVG.			
		YEAR	YEAR				
OAKLEY	77.4	8.1	10.9	26.5	Raft River	2	95 70
SALMON FALLS	182.6	14.1	25.0	49.3	Goose-Trapper Creeks	2	133 78
OWYHEE	715.0	221.0	421.4	464.0	Salmon Falls Creek	7	120 80
					Bruneau River	8	79 77
					Owyhee River	20	69 65

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

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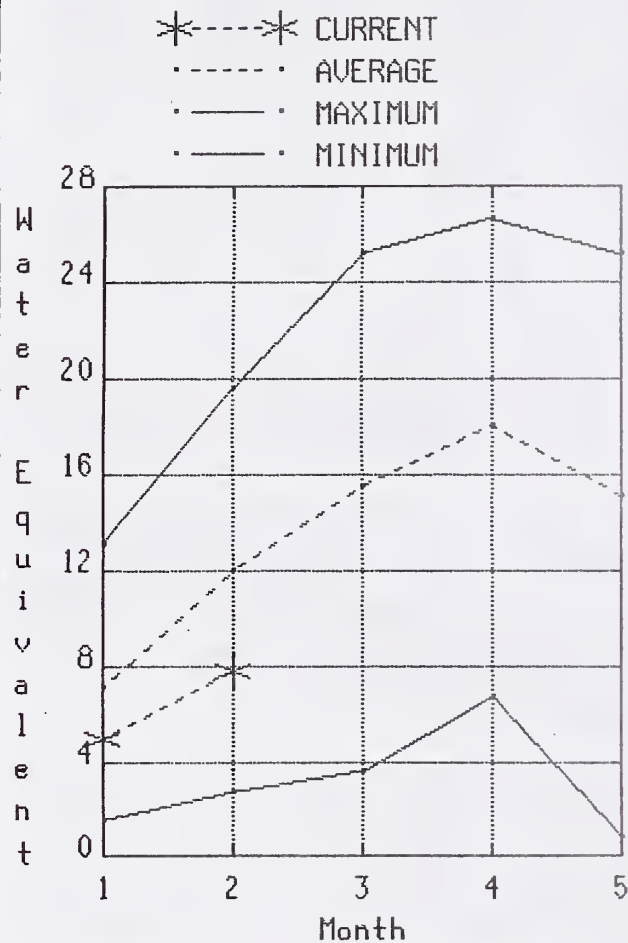
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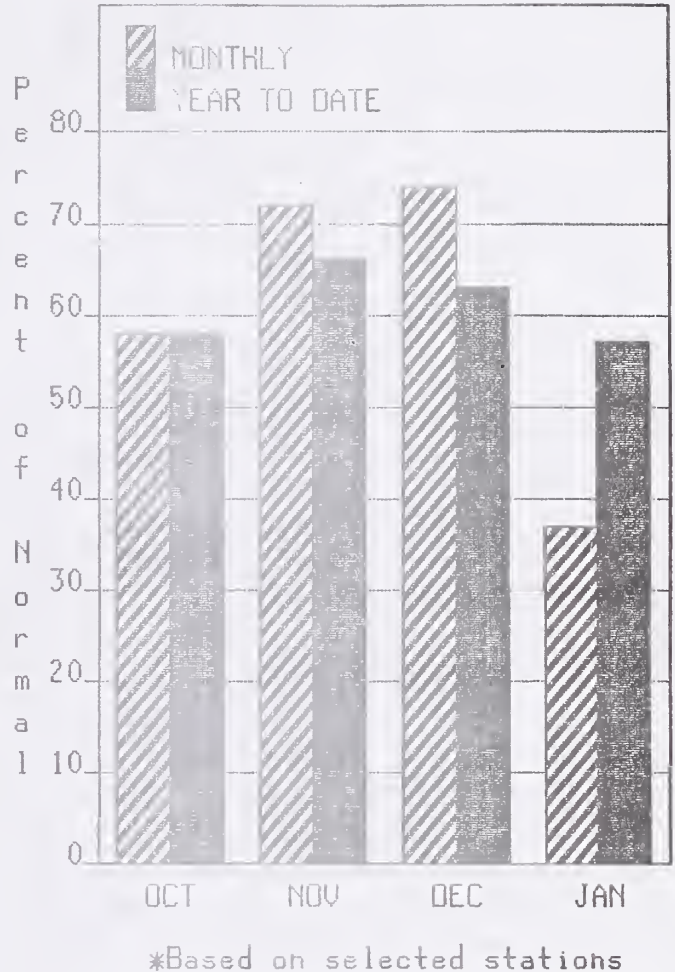
# Great Basin

## FEBRUARY 1, 1991

Mountain snowpack\* (inches)  
GREAT BASIN



Precipitation\* (percent of normal)  
GREAT BASIN



## WATER SUPPLY OUTLOOK

Snowpacks in the Great Basin have declined somewhat, in terms of percent of normal, from the conditions reported last month. With less than half of normal snowfall received during January, snowpacks are now only in the 66 to 70% of normal range. Streamflow forecasts reflect the below normal snowpack conditions and currently range from 56% of normal for the Bear River to 75% for Montpelier Creek. Reservoir storage in Bear Lake is only 50% of normal (35% of capacity), and Montpelier Creek Reservoir reports only 35% of normal storage (15% of capacity). Water users in southeastern Idaho should be prepared for potentially short water supplies this summer and should keep in touch with their local irrigation districts for more specific information.

# GREAT BASIN

## STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	<----- DRIER ----- FUTURE CONDITIONS ----- WETTER ----->						25 YR. (1000AF)
		CHANCE OF EXCEEDING *						
		90% (1000AF)	70% (1000AF)	50% (MOST PROBABLE) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BEAR nr Harer	APR-SEP	26	99	175	56	250	360	310
MONTPELIER CK nr Montpelier	APR-SEP	3.1	7.4	10.4	75	13.4	17.7	13.9
CUB nr Preston	APR-SEP			37	71			52
	APR-JUL	14.0	26	34	73	42	54	47

RESERVOIR STORAGE (1000AF)					WATERSHED SNOWPACK ANALYSIS			
RESERVOIR	USEABLE : CAPACITY :	** USEABLE STORAGE **			WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF	
		THIS YEAR	LAST YEAR	AVG.			LAST YR.	AVERAGE
BEAR LAKE	1421.0	493.6	730.6	987.6	Bear River (above Harer)	12	95	67
MONTPELIER CREEK	4.0	0.6	0.5	1.7	Montpelier Creek	5	90	67
					Mink Creek	3	113	70
					Cub River	2	118	71
					Malad River	1	93	66

\* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1985 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

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# **Basin Outlook Reports**

## **and Federal - State - Private Cooperative Snow Surveys**

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*For more water supply and resource management information, contact:*

**USDA. Soil Conservation Service  
Snow Survey Data Collection Office  
3244 Elder Street. Room 124  
Boise. Idaho 83705  
(208) 334-1614 FTS 554-1614**

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### *How forecasts are made*

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Soil Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

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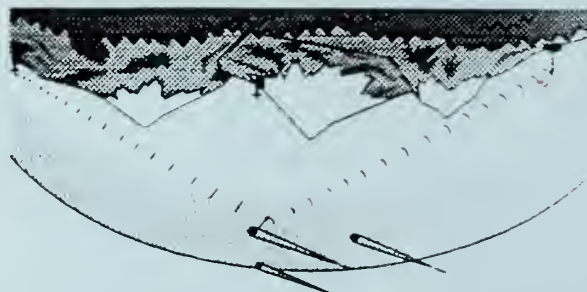
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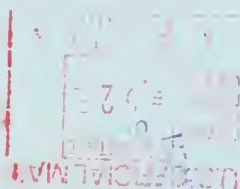
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## Basin Outlook Reports



In addition to basin outlook reports, a Water Supply Forecast for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209-3489.

### *Issued by*

**William (Bill) Richards**  
Chief  
Soil Conservation Service  
U.S. Department of Agriculture

### *Released by*

**Paul H. Calverley**  
State Conservationist  
Soil Conservation Service  
Boise, Idaho

### *Prepared by*

**Peter L. Palmer, Data Collection Office Supervisor**  
**Philip S. Morrissey, Hydrologist**  
**Susan R. Ellis, Statistical Assistant**  
**D. Rick Eastlund, Electronics Technician**  
**Bill J. Patterson, Electronics Technician**